IPA

Independent Project Analysis Newsletter

Independent Project Analysis, Inc. is the preeminent organization for quantitative analysis of capital project effectiveness worldwide. At IPA, we provide practices you can use to ensure your success.

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Research Spotlight:

China Procurement for China Projects & Global Projects

Pei Hsing Seow, Christina Yip, PhD, and Phyllis Kulkarni

The China Project Management Forum (CPMF), which was formed in 2007, is a bi-annual meeting organized by IPA to facilitate the exchange of ideas, practices, and solutions for capital projects in China. Forum members include representatives from over 25 Chinese and Western owner companies that operate in various processing industries in China. This article contains a series of learnings from the CPMF on procurement in China as well as findings from IPA research studies on projects in China.

IPA data show that procurement in China continues to rise. Projects executed in China procure over 70 percent of their equipment and almost all of their bulk materials in China[1]. Procurement from China by global projects is likewise increasing. About 40 percent of global companies have established a procurement hub in China and current forecasts call for procurement spending by Australian mining companies alone in China to be over $15 billion in the next 5 years[2]. Lower cost and speed contribute to the attractiveness of procuring in China; however, quality issues are not uncommon.

In this article, we discuss the advantages and trade-offs posed by China procurement and present practices to maximize the benefits of procuring in China.

Why Procure in China?

IPA research[3] has shown that procuring equipment in China is, on average, 20 percent more cost effective than if done in the US or Europe, and 10 percent more cost effective than other Asian countries, on average. It is common knowledge that labor costs are low in China, which is the key to China's success as a manufacturing powerhouse. Also, China offers competitive pricing for standard materials of construction (the cost savings may not be as significant for specialty materials).

Low costs are not the only advantage of procuring in China. Faster schedules are another benefit. IPA research[4] has shown that increased onshore equipment procurement for China projects can improve construction schedule performance by up to 15 percent, because of shorter delivery times, faster fixes to potential quality problems, and no need to clear customs.

In addition to low costs and short lead-times, the CPMF reports that Chinese vendors/suppliers offer flexibility in changing or customizing designs. Vendors are usually willing to deviate from the standard design and fabricate any design without charging higher premiums.

Finally, local procurement brings additional benefits to projects located in China. First, the proximity to the vendor shops makes face-to-face interactions easier to establish, thus allowing for effective communication among vendors, the Chinese Design Institutes (CDIs), the project

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1 Christina Yip and Kang Jian, *Developing Successful Projects in China,* IPA, 2009.
2 Source: The Australian, January 18, 2012.
3 Paul Barshop, Andy Ratliff, and Robert Brown, *Equipment Procurement Practices That Reduce Cost*, IPA, IBC 2010, March 2010.
4 Christina Yip and Kang Jian, Developing Successful Projects in China, IPA, 2009.

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teams, and site personnel. Second, local vendors are familiar with the *Guo Biao* (GB) codes. Given that all equipment installed in China needs to comply with the GB codes or a more stringent standard, familiarity with the GB codes makes it easier to procure in China compared with having to invest additional time with overseas vendors to clarify the codes.

The Trade-Off

While costs are low and lead times are short, they may come at a price in the form of poor quality. IPA research[5] has found a high frequency of vendor quality problems on projects that procured in China, as shown in ***Figure 1***. These quality issues can erode project cost effectiveness.

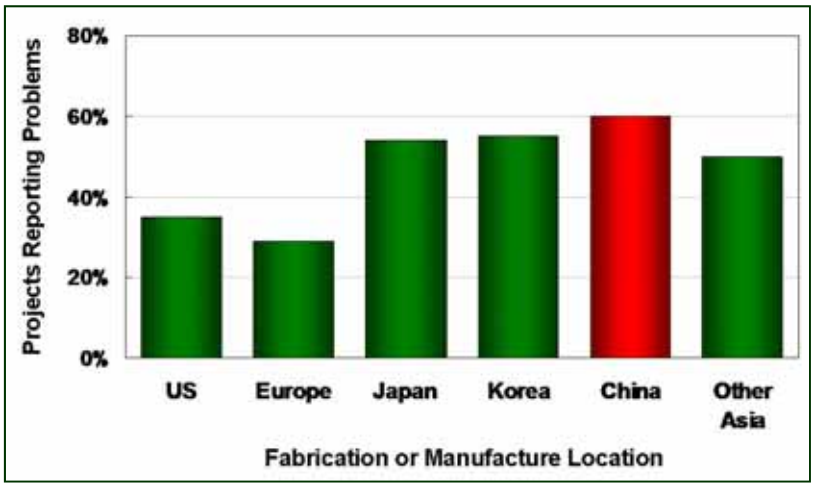

Figure 1. **Frequency of Vendor Quality Problems Is Higher in Asia**

The CPMF discussions indicate that workmanship is one of the contributing factors of the prevalent quality problems encountered in projects that procured in China. It is not uncommon for teams to receive fabricated items that appear perfect, only to discover integrity issues later on. Common problems include equipment failing to function prior to reaching the expected design life, and equipment requiring more maintenance and repairs than expected. Another category of quality problems arises from vendors delivering finished products that are not built to the specifications required. This stems from a poor understanding or misinterpretation of the specified codes. Even though the use of GB code can make it easier to procure in China as discussed earlier, it is reported by CPMF members that even if the specifications are based on the local GB codes, problems may still occur because the codes can be interpreted differently. In cases where non-China standards and specifications are used, quality issues around code misinterpretation are even more common, and can have with severe consequences. The CPMF reports that quality problems arising from incorrect specifications are more prevalent on exported items (i.e., exported from China to overseas projects) than on items to be installed within China because of a poor understanding of the non-China standards and specifications.

Another factor that can jeopardize the benefits that China procurement offers is the performance of the sub-suppliers. The quality delivered by these parties and their ability to deliver on time can be inconsistent.

How to Successfully Procure in China

Successful procurement in China requires a marriage between two key practices: (1) effective management of the procurement activities and (2) an understanding that buying in China may not be as cheap as anticipated. While IPA research has identified savings of 10 to 20 percent, the expectation of many companies procuring from China for the first time is to achieve much higher savings, which usually is not realistic. Both project teams and management need to recognize that although equipment may be cheaper in China, it is necessary to invest money to ensure that the quality of that equipment is acceptable. Below, we present ways to effectively manage procurement in China:

- ***Establish an owner procurement organization with Chinese personnel.***

  Having an owner organization with local personnel allows a good mix of global expertise with local

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[5] Paul Barshop, Andy Ratliff, and Robert Brown, *Equipment Procurement Practices That Reduce Cost*, IPA, IBC 2010, March 2010.

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knowledge. Local knowledge (i.e., understanding the procurement culture and knowing the local language) is important in managing the vendors to develop *guanxi* (a step in working toward developing a long-term relationship). Speaking the same language reduces misinterpretation. Global expertise is critical in ensuring the foreign codes and standards are clearly communicated to the vendors. For companies that do not have investments within China, this may mean establishing a procurement hub in China. Setting up a hub can also provide a platform for cost saving opportunities through bulk-buying from China. Although the cost of establishing an owner procurement organization in China can erode some of the savings associated with procuring in China, the companies that have implemented this approach report that it is very beneficial for the above reasons.

- ***Conduct due diligence in vendor selection.***

It is important to make a careful decision not just about the vendor, but also about the sub-suppliers employed by the vendor. It is reported by the CPMF members that even though some Chinese vendors (mainly Class A Chinese vendors) may have improved their quality recently, overseas projects often take priority at the vendor's shop to promote export. Subsequently, sub-contracting by Class A Chinese vendors has become quite common. However, the performance of the sub-suppliers can vary greatly, and the quality of some sub-suppliers can fall far short of the quality expected from engaging a Class A Chinese vendor.

- ***Ensure alignment on the specifications.***

Quotations from the vendors often may have been prepared by the commercial/sales group, without involvement from the technical/fabrication group. Hence, it is important that the engineering/technical personnel from the owner and vendor reach alignment on the specifications and assumptions made before issuing the purchase order.

- ***Define and document the quality management requirements and ensure these are clearly communicated to vendors.***

It is important that the owner and vendor are aligned; all requirements should be documented. Areas such as claim management, contract management processes, and the owner's inspection requirements should be clearly communicated to the vendors and documented.

- ***Ensure strong owner involvement in quality management.***

IPA research[6] shows that China projects in which the owner was involved in managing local procurement were less likely to experience quality problems, as shown in ***Figure 2***. Having the owner team fully responsible for inspection during fabrication may not be fully feasible; it is a common practice in industry to employ third party inspectors to support the owner's team. However, owner oversight is still critical in managing the third party inspection. In particular, it is advisable for the owner to take the lead role in inspecting critical equipment.

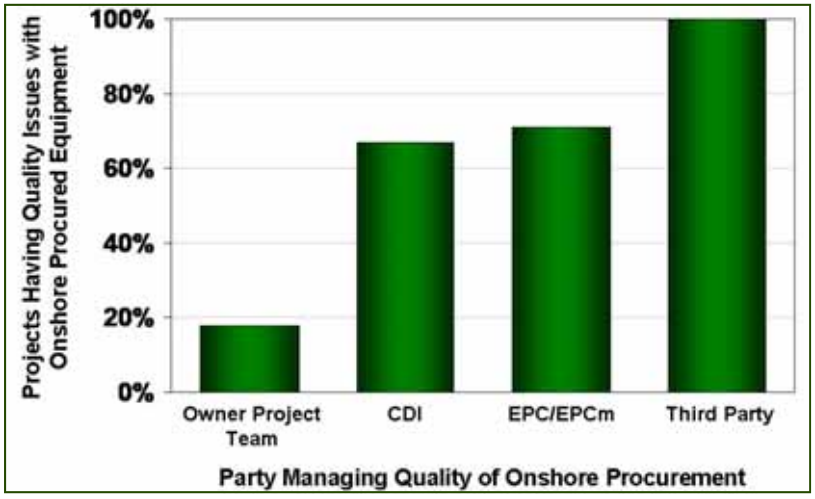

Figure 2. **Owner Representative Is the Best Resource to Manage China-Procured Equipment Quality**

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[6] Source: Christina Yip and Kang Jian, *Developing Successful Projects in China,* IPA, 2009.

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Conclusions

Procuring in China is still a very attractive option. While it is true that projects can benefit from cost savings by procuring in China, there is a trade-off—suboptimal quality—that should not be overlooked. It is critical to recognize the need to invest capital and resources to mitigate the risk of compromised quality. The key to successfully realizing cost savings and fast deliveries from procuring in China while minimizing the likelihood of poor quality is active owner involvement.

This year, IPA is launching its third China study. Previous studies have identified cost, schedule, and operability factors for China projects relative to industry norms. The 2012 study will update these factors. In addition, the study will focus on identifying Best Practices for local content management, covering the areas of procurement, team staffing, and managing CDIs.

For information on joining the China PM Forum, contact **Christina Yip**, CPMF Lead and China Study II Lead Author, at ***+61 (39) 458-7311*** or ***cyip@ipaglobal.com***.

For information on the 2012 China Study, contact **Natalia Zwart**, Chemicals, Life Sciences, and Nutrition Business Area Manager, at ***+1 (703) 729-8300*** or ***nzwart@ipaglobal.com***.

Professional Profile: *Pei Hsing Seow, Project Analyst*

Pei Hsing joined IPA in 2007 and has conducted numerous benchmarking studies and individual project evaluations for refining, chemical and mining industries in the Asia Pacific region. Recently, Pei Hsing has taken an interest in the performance and practices of projects executed by the Chinese and non-Chinese owner companies in China, and has participated in IPA's China Project Management Forum. Pei Hsing obtained a M.Eng in Chemical Engineering and a B.Eng (Hons) in Chemical Engineering from the National University of Singapore.

Professional Profile: *Christina Yip, PhD, Project Analyst*

Since joining IPA in 2004, Christina has evaluated over 200 projects ranging from US$0.5 million to over US$10 billion in size around the world for a wide range of industries and clients. Christina has led an industry-wide study on the performance of projects executed by Western owner-companies in China. In addition, she has been organizing IPA's China Project Management Forum since 2007 for owner companies (including both national Chinese and non-Chinese companies). Christina obtained a Ph.D. in Chemical Engineering, a B.E. (Hons) in Chemical Engineering, and a B.A. in Chinese and China Study, all from the University of Melbourne.

Professional Profile: *Phyllis Kulkarni, Manager Plant-Based Systems*

As Plant-Based Systems Manager, Phyllis oversees the worldwide business and technical development needs for the Plant-Based Systems business sector of IPA. Plant-Based Systems encompasses small project and turnaround benchmarking and licensing of IPA's FEL Toolbox.

Previous to her promotion to a managerial position, she served on IPA's Review Board for two years, reviewing projects for multiple IPA business areas. Before her position as a Reviewer, she was a Senior Project Analyst with IPA's Latin American Project Center (Centro de Proyectos Latinoamericanos) and was involved in the analysis of petroleum, chemical, and mining projects in Latin America, the U.S., and Spain. In addition, Phyllis has led megaproject assessments, site benchmarkings, turnaround evaluations, and analyses of exploration and production projects. In 2003, Phyllis presented the results of a research study that she led on Joint Venture projects at IPA's annual Industry Benchmarking Consortium (IBC). Phyllis was the Coordinator for IBC 2010 and 2011.

Prior to joining IPA in 2002, Phyllis interned as a translator for Repsol YPF in Buenos Aires, Argentina. Phyllis holds a B.S. in Languages and Linguistics from Georgetown University, Washington, D.C.

Research on the Human Element of Capital Projects

An Overview of IPA's Products & Services for Evaluating Teams and Organizations

Kate Rohrbaugh, Research Team Leader, Product Development Group

Capital projects are planned and executed by teams and within the constraints of a particular organization, both of which are entities of human creation. Over time, IPA has found that these human elements can and do have a very real impact on capital project outcomes – both positive and negative. IPA has developed approaches to measuring and analyzing the effectiveness of project teams and organizations, and is committed to ongoing research in these areas.

Current Approaches to Understanding Teams and Organizations

When it comes to understanding the human element in projects, IPA addresses three main questions on an ongoing basis:

1. ***How do project organizations or systems affect capital project outcomes?***
2. ***How do team staffing and development affect capital project outcomes?***
3. ***How do team dynamics and leadership affect capital project outcomes?***

Below, we discuss the approaches IPA offers to companies in the manufacturing and processing industries trying to find answers to these questions.

1 *How do project organizations or systems affect capital project outcomes?*

To address this question, IPA holds the annual Industry Benchmarking Consortium (IBC) as a venue in which to assess project system effectiveness across industry, but IPA offers a more detailed analysis as well. The "Organizational Effectiveness Assessment" collects and analyzes data on a company's capital project system: the portfolio, structure, work process, and human resources. From this, IPA can provide benchmarks for the company's staffing, and assess the structure and work process of the organization. The recommendations developed from this analysis are based on observations of industry average and Best Practice. This assessment can be executed for either one or several capital project systems within one company, ranging from an assessment of a plant-based system (i.e., one at a single manufacturing site) or a large centralized engineering system. For more information on the Organizational Effectiveness Assessment, please contact ***Valerie Roma*** at ***vroma@ipaglobal.com*** for large capital project systems or ***Phyllis Kulkarni*** at ***pkulkarni@ipaglobal.com*** for plant-based systems.

2 *How do team staffing and development affect capital project outcomes?*

For this assessment, IPA relies on two main sources. The first source is the data captured during a typical PES® evaluation about project management, functional team integration, the establishment of roles and responsibilities, time on the project, and so on. This information provides the data for IPA's rating of the Team Development Index (TDI), and enables IPA to identify project manager turnover and general instability within the core team.

The second source for data was a large research study of approximately 100 projects that took a deeper look into team staffing for a capital project. This study comprised an in-depth review of staffing including the number of full-time equivalents (FTEs) by function and by project phase, several managerial levels into the management structure. For more information about this evaluation, please contact IPA and ask to be connected with the appropriate Business Area Manager or Client Coordinator.

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3 How do team dynamics and leadership affect capital project outcomes?

Last, IPA offers a tool for assessing a team's functionality by collecting data directly from team members. This instrument seeks team member opinions on a variety of topics including the clarity of project and business objectives, team behavior, team communication, the project process, and others. IPA has found this to be an excellent diagnostic tool for looking "under the hood" because team members' perceptions are often an early indicator of project success, long before other indicators can be determined.

Path Forward for IPA's Research Agenda Into Teams and Organizations

Going forward, IPA will be expanding its ability to analyze projects on all these levels—the organizational level, the core project team, and the team member level. IBC 2012 included several studies on teams and organizations; for IPA clients, findings from these research studies will be integrated into project evaluations.

In terms of other ongoing research efforts, at the organizational level, IPA has recently updated the analysis of staffing for plant-based systems, and continues to gather robust data on staffing and organizations at the system level. At the project leadership level, IPA will be rolling out new tools for providing guidance on how megaproject teams are staffed, resourced, and structured. If your company is interested in assisting in the development of this tool, please contact ***Kate Rohrbaugh*** at ***krohrbaugh@ipaglobal.com***.

As a follow-up to his recent study at IBC 2012, "Project Team Functionality," Rob Young will be looking at the interaction between business and team leadership and how this affects project outcomes for IBC 2013. If your company is interested in participating in this study, please contact ***Rob Young*** at ***ryoung@ipaglobal.com***.

In sum, IPA has and continues to develop a robust collection of metrics and tools for understanding one of the most elusive elements of any capital project, the human element.

IPA Is Expanding Its Subscriptions and Publications Business

The IPA databases are a unique source of capital project information. These databases are the key to our research, project evaluations, and market-related information. We are expanding our subscriptions and publications to allow broader access to this information.

Existing Subscriptions

FEL Toolbox

IPA's oldest subscription product is a software tool for providing a Front-End Loading (FEL) Index value based on project information entered by the user. This web-based tool is accessed every day by project teams from around the world and has been proven to work with proper training. Users receive two main benefits: (1) a self-evaluation using IPA's FEL Index to gauge the project's level of definition and (2) detailed suggestions for improving definition and reducing project risks.

EPC Market Forecast Newsletter

This is IPA's quarterly newsletter that provides subscribers with historical and forecasted escalation indices for various cost categories across nine regions. The information has become the standard source of cost escalation information for the Engineering, Procurement, and Construction markets. It is widely used in estimating the escalation line item in cost estimates.

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New Subscriptions and Publications

New!

Business Professionals' Capital Projects Newsletter - Available in August 2012

Some organizations are simply better than others at developing capital projects and these skills provide a significant competitive advantage. These organizations are more effective at implementing best practices. The key differentiating feature is the role of business in the development of capital projects. The business stake is not small. For example, it could be fairly easy to save 10 percent of an organization's annual capital spending. The additional money saved could be used to immediately enhance financial returns or serve as additional investment for future gains.

The Business Professionals' Capital Projects Newsletter is aimed at improving the interface between business and capital project representatives ***(Figure 1)***. The connection between these two functions has proven to be a critical leveraging point for improved financial returns. This quarterly Newsletter will quantify the benefits and practices surrounding the business connection to projects.

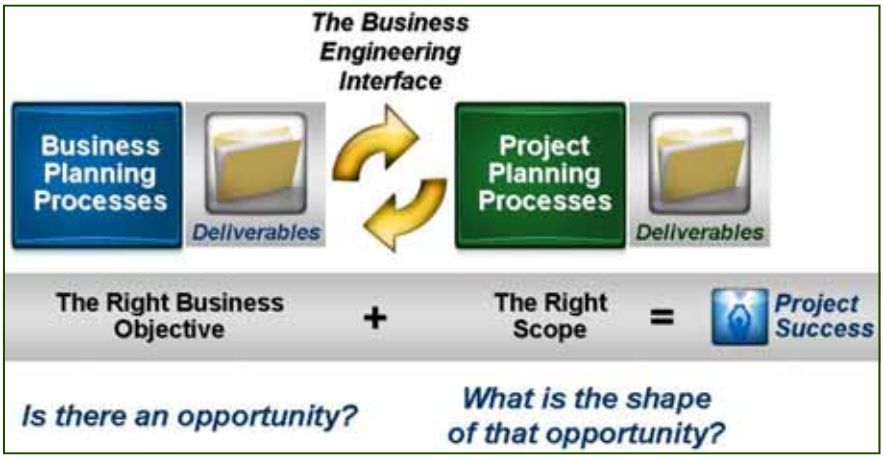

Figure 1. **Business-Engineering Interface Is Crucial to Success**

Subscribers will receive a quarterly newsletter filled with data, articles, and discussion points for improving the connection between the business and project groups.

IPA Capital Project Regional Publications - Available in October 2012

IPA will begin a series of publications that focus on the challenges of developing capital projects in different regions. Some regions are more difficult than others. There is a wide variety of reasons for different regional challenges. They range from economic, political, and social norms to weather issues and lack of infrastructure, to simply lacking local knowledge and experience. The purpose of these publications is to improve our collective understanding of the interaction between project context and project success.

The IPA Capital Project Regional Publications focus on the connection between regional conditions and capital effectiveness: how the local situation affects project scope, the implementing organization, specific project practices, and in turn, capital project performance ***(Figure 2)***.

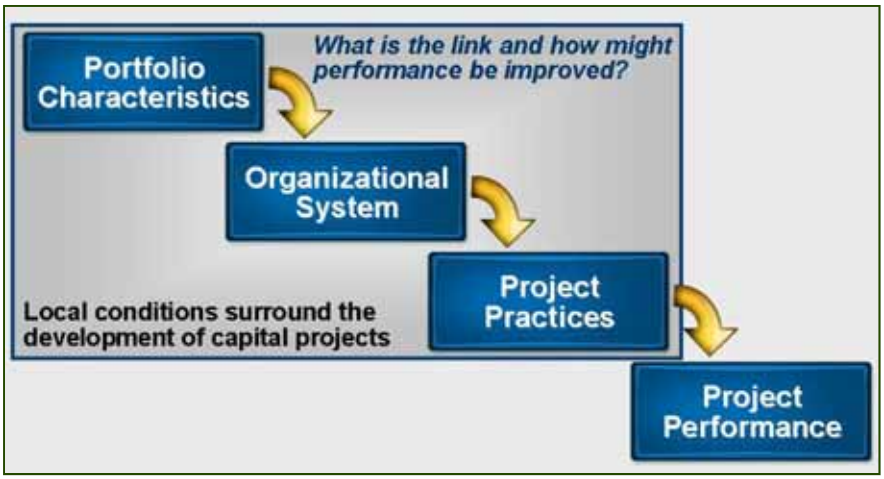

Figure 2. **The Link Between Local Context and Project Performance Is Critical**

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Each regional publication will represent the collective experience of hundreds of actual projects developed in the region. The publications should quickly become a definitive source for improving capital project success within the region. Regions will be selected based on client interest. The initial publication will focus on Alberta,

Annual subscriptions to the ***Business Professionals' Capital Projects Newsletter*** and publications for ***IPA Capital Project Regional Publications*** will be available subject to the terms and conditions of the existing contract between IPA and the subscribing/purchasing company.

Please contact ***Dean Findley, Regional Director North America,*** with any questions or comments at ***+1 (703) 729-8300*** or ***dfindley@ipaglobal.com***

Aligning the Contractor and Owner Planets to Deliver Project Success

Peter Michael Kirkham, Associate Project Analyst

In late March, Peter Kirkham, Associate Project Analyst in IPA's Singapore office, was invited to act as a discussion leader for a **Society of Petroleum Engineers** (SPE) Applied Technology Workshop (ATW) titled "Integrated Project Management: Innovative Approaches for a New Era" in Phuket, Thailand. An ATW is similar to a conference, but it has a more informal style with more emphasis on prompting discussion from the audience rather than a lecture. Perhaps aided by the attractive location, the ATW delegates comprised a large cross-section of the upstream oil and gas industry (owner companies and contractors) in Asia, with a few international delegates from North America, Europe, and the Middle East.

The ATW provided a useful forum for the many different groups within the upstream industry to share their views in a non-confrontational environment. IPA led two sessions during this 3-day event, drawing on IPA's large repository of project research to generate the basis for discussion and drive participation from the audience. As neither owner nor contractor, IPA was called on more than once to provide an unbiased opinion on what insights our data could provide to a particular topic, and played a very active role in the proceedings.

The IPA-led discussions focused on two specific areas: ***the project execution phase*** and ***the importance of integrated teams in delivering successful megaprojects***, drawing on Ed Merrow's recently published book, *Industrial Megaprojects: Concepts, Strategies, and Practices for Success*, as a basis of discussion.

Project Execution Phase Discussion

The first discussion focused on the execution phase of a project. The supporting presentation used IPA's data to show that offshore projects typically are working toward a fixed sail-away date and that allowing sufficient float in the project schedule is important to avoid carryover of fabrication work into the offshore environment. The hook-up and commissioning costs as well as the overall project cost will significantly increase should the project be forced to carry work offshore. Maintaining the project schedule requires good project controls and discipline beginning very early in execution. IPA research further shows that if detailed engineering starts to slip, then it is better to slip the commencement of fabrication in tandem rather than simply to proceed and potentially incur a larger degree of re-work.

The audience discussion that followed IPA's introductory presentation highlighted the differences between the contractor and owner company viewpoints. Whilst the owner might feel a contractor should deliver on a promise

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of meeting a particular schedule target, the contractor believes it is being asked to deliver the project as fast as possible and it is not its responsibility to plan for the big picture. In fact, one fabrication contractor was so bold as to "suggest" that this sounded like preparation work that should happen before sanction and was, in fact, the responsibility of the owner company. IPA could not agree more! The problem is that, as an industry, a standard approach involving detailed Front-End Loading (FEL) and careful planning is still not being implemented by all companies and, in the cases in which it is not being used, there is a naïve expectation that risk can be passed onto the contractor, who will fix the problem.

Team Integration Discussion

The second discussion was centred on the importance of team integration, and served to remind the participants that it is people who do projects, and unless we can communicate effectively, a project will struggle to succeed.

The premise is that, for E&P projects, success can be defined as a project that comes in on budget, on schedule, is competitive against the industry cost and schedule benchmarks, and, last but not least, produces as planned. Achieving such an outcome can be more challenging for E&P projects compared with other industries simply because of their complexity, which encompasses several disciplines. An E&P project is much more than just the fabrication and installation of facilities. It must effectively develop and deplete a reservoir, and the facilities must continue to operate efficiently over the life of the field. Therefore, a successful E&P project must integrate the subsurface, facilities, and drilling disciplines. An integrated team has functional representation from all disciplines that contribute to the overall success of the project at the asset level, with clearly defined roles and responsibilities for each team member.

Early team integration fosters communication between disciplines and, like FEL, has been shown to be a leveraging factor for project success. Projects with integrated teams achieve faster schedules, experience lower cost growth, and are more likely to achieve their production goals. Projects that do not employ integrated teams not only achieve poorer results, but they also place themselves at risk of catastrophic failure. A sobering reminder of how important this is was volunteered by one of the audience members from an owner company who explained that a project he had worked on recently was a technical success from the facilities perspective, but in the rush to achieve first oil, the subsurface work was neglected. The sad, but not uncommon, result was that the facilities have still not achieved sustainable production.

IPA Recommendation From ATW Discussions

The ATW discussions led by IPA indicated that there is still much work to be done to build the trust between owner companies and contractors; it will take time to build a mutual understanding of their different drivers. But it is not impossible! Included in the ATW discussions were several examples of successful projects (which are also in IPA's databases) that were driven, in part, by strong teamwork between the owner and contractor teams.

The different perspectives expressed at the ATW remind us that owners and contractors are driven by different

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The goal of the *IPA Newsletter* is to provide you with research-based articles on current capital project issues, announce upcoming IPA events and IPA Institute course offerings, and introduce new and future IPA products that can improve your project management systems.

To subscribe to the IPA Newsletter and to view an archive of all past issues, please visit our website at *www.ipaglobal.com/Newsletter*.

To be kept informed regarding upcoming IPA Institute programs and courses being developed for capital project improvement, please join our mailing list at *www.IPAInstitute.com*.

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goals. Owners must focus on asset health and quality, while contractors need to focus on execution excellence. And their perceptions of risk are completely different. One of the key mistakes that cause megaproject failure is pushing the project's risks onto the contractors.

Ultimately, owners and contractors are just different. Understanding, appreciating, and supporting these differences are essential for successful projects, as Ed Merrow observes in his book:

> ***"When it comes to perceptions of risk, owners and contractors live in completely separate worlds. As the expression goes, where you stand depends on where you sit. Owners complain that contractors don't want to take on any risk, which they equate to responsibility, and that when contractors do, they want inordinately high prices for taking the risks on. Contractors believe that owners are pushing them to bet their business on every project and would push them into bankruptcy without a second thought."***

At the end of the day, the secret recipe for success all projects are looking for is simple: We just need to listen to each other and work together.

IPA Gulf of Mexico Decommissioning Study

There has been a significant increase in decommissioning activity in the Gulf of Mexico (GOM) in recent years and further increases are expected given that the end of life is nearing for a number of facilities, both large and small, operating in the region and because of the new regulations being promulgated by the US Bureau of Safety and Environmental Enforcement (BSEE). Current estimates are that there will be about $1 billion per year of decommissioning activity in the GOM involving platform removals, pipeline abandonments, and permanent well plugging over the next 5 years. However, at present, operators, contractors, and regulators do not have a preponderance of reliable data available to use in planning and benchmarking.

Decommissioning costs are often treated as an operational expense rather than a major capital expenditure and have not been considered as significant as the initial up-front cost. Therefore, fewer resources have been focused on tracking and controlling these costs. Learnings from past and current projects can and should be applied to future activities for continuous project improvement.

The purpose of this study is to pool the learnings of decommissioning projects in the GOM from several operators and to distill them into Best Practices, identify root causes of the poor outcomes, benchmark company performance against Industry as a whole, and guide later projects on cost and schedule planning. While the study will develop performance metrics from the GOM decommissioning projects, it will be set up so that the results can be incorporated into projects worldwide after this initial regional study is completed.

Key Questions to Be Considered

IPA will work with the participating companies to develop a set of specific questions to be answered in the study. A sampling of the types of questions to be considered in the study includes:

- What types of decommissioning activities can be benchmarked (platform disposal/removal, well abandonments, and pipeline decommissioning/removal)? What data are available to analyze each of these activities?

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- What are the practices, standards, and regulatory requirements that drive the performance of GOM removals? Are they distinctly different from decommissioning globally? If so, how? How does engaging the regulators in abandonment planning impact the outcomes? What is the right level of involvement from the stakeholders?
- What cost and schedule metrics are most useful to operators in evaluating current performance and planning for future decommissioning activities: activity averages and ranges; regressions, where sufficient data are collected; cost/duration per unit (i.e., weight, water depth, well, distance), etc.?
- Are abandonment cost estimates used in front-end project planning accurate or reliable? If not, what needs to change to make these more realistic?
- How have recent cost escalation trends affected the decommissioning market? How predictable has cost forecasting been when measured in terms of nominal cost growth and schedule slip? How can predictability be improved?
- What, if any, are the differences in performance between:
  - Large IOCs versus medium/smaller independents
  - Those who do substantial work internally versus those who contract it out
  - Companies with large annual programs versus less frequent activity
  - Organizations that have a defined process versus ad-hoc planning
  - Level of collaboration/partnership with contractors
  - Types of platform (large/small) and selected techniques (R2R, topple, removal)
  - State of platform/pipeline/well condition
- What specific industry lessons learned from past abandonment projects/programs can be collated and transferred to improve the performance of future work?
- Has new and emerging technology improved cost and schedule performance over past abandonment programs? Have process improvements had an impact?

Deliverable Product

Each participating company will receive a briefing identifying the findings from this research study and a customized executive summary report that will highlight the performance of its specific projects relative to the peer group. The summary for those companies that have not submitted project data will include industry performance metrics, but not company-specific performance metrics.

Where possible, with sufficient data, we will segment the projects into categories of abandonment types (i.e., facilities removal or toppling, pipeline, wells, etc.). Some of the items in the briefing could include:

- Cost and schedule metrics for GOM decommissioning
- Top quartile performance targets for GOM projects, if available
- Identification of common gaps/trends in Front-End Loading
- Best Practices from projects, if available
- Root causes of problems and any commonalities across projects/programs
- Collation of lessons learned (grouped into themes), if available

For more information on this study or if you wish to participate, please e-mail us at decom@ipaglobal.com.

IPA Subsea Study

A Joint Industry Study to Quantitatively Evaluate the Subsea Market, Drivers of Subsea Competitiveness, and Drivers of Regional Differences

The spending on subsea developments has grown significantly in the last few years. As the industry moves into deeper and deeper waters, most operators prefer to use subsea systems tied back to a host. The subsea developments of today are much more complex than even a few years ago; today, we see large (more than 25 wells) developments, developments designed to handle high-pressure developments, and subsea separation and even compression. At the same time, the subsea equipment and installation markets continue to consolidate and become more regional. As IPA has shown at its benchmarking consortium conferences, there are significant regional differences in subsea competitiveness and a large separation between subsea equipment prices and underlying fundamental inflation.

Operators naturally have questions such as:

- What is the real escalation over time in subsea equipment and subsea installation costs?
- How much "markup" is being charged above and beyond the escalation due to heightened demand?
- Is there a difference in subsea escalation between the various regions of the world?
- How do various operators compare to Industry in terms of cost competitiveness and what are the drivers of competitiveness?
- How do regional characteristics and market segmentation affect subsea cost competitiveness?
- Do long-term frame agreements or standard designs improve competitiveness?

The goal of this study is to provide answers to these questions using a large industry sample and to provide comparisons against Industry for operators that participate in this study.

Purpose

The purpose of this study will be to pool the data from several operators' subsea projects executed across the world and benchmark the individual company's performance against the industry as a whole and to guide later projects regarding the state of the subsea markets, subsea escalation, and the drivers of subsea cost competitiveness. Because the companies participating in the study are global and regional players, we will be able to globalize the findings and incorporate data from projects worldwide. Further, this will allow for comparisons to be made across regions to identify regional characteristics or requirements that generate a price premium after controlling for technical and environmental characteristics.

IPA will accomplish these goals by analyzing data for projects executed by operators participating in this study as well as data contained in the IPA databases from non-participating operators. The basic project data will be supplemented by interviews with key personnel from participating companies to gather company perspectives on escalation, subsea market factors, regional requirements that drive premiums, the role of standardization, etc. Where available, we will also use public and other proprietary data to understand escalation in the subsea market.

Key Questions To Be Considered and Conceptual Approach

IPA will work with the participating companies to develop a set of specific questions to be answered in the study. These questions will be based on the most relevant and important issues facing the operators today regarding subsea systems. The specific study questions will not be determined until the industry representatives

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have had time to provide input and consider the issues fully. However, in discussions with the operators during the prospectus development stage, it was clear that the questions fall in the following three broad categories:

1. ***Understanding subsea markets and escalation***
2. ***Identifying technical and non-technical drivers of subsea cost performance***
3. ***Understanding the drivers of regional price differences in subsea systems of similar scope***

The conceptual approach for the study is illustrated in ***Figure 1***. The logical progression of deliverables is necessary to properly and accurately answer the questions raised.

Figure 1. **Conceptual Approach Evaluating Industry and Operator Subsea Cost Competitiveness**

Product

Each participating company will receive a copy of a briefing that identifies the findings from this research study and a customized executive summary that highlights the performance of its specific projects relative to the peer group. The comprehensive set of results will be presented at the conclusion of the study in one or two briefing locations convenient for the participants. Alternatively, detailed individual presentations to participating companies can be arranged on a case-by-case basis. The deliverables from this study will be available only to participating companies and no individual project information will be made available under any circumstances.

For more information on this study or if you wish to participate, please contact Neeraj Nandurdikar at nnandurdikar@ipaglobal.com.

InSites: *Research and News for Small Projects*

InSites is a blog dedicated to improving small project performance. InSites features a series of short articles to address issues specific to small, site-based projects. These articles will address everything from key practices to driving more competitive performance, to commonly asked questions about how to prepare for an IPA benchmarking.

To add your name to the distribution list, please contact ***Phyllis Kulkarni***, Plant-Based Systems Manager, at ***pkulkarni@ipaglobal.com***, or visit the IPA InSites website at ***www.IPAGlobal.com/News-Room/InSites***.

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Exploration and Production Project Best Practices (22 Professional Development Units)

August 7 - 9: Rio de Janeiro, Brazil

Establishing Effective Capital Cost and Schedule Processes (16 Professional Development Units)

August 22 - 23: Sao Paulo, Brazil

Upcoming IPA Events & Presentations for 2012

June 20 - 21

2012 Upstream Cost Engineering Committee (UCEC) in Houston, Texas

The UCEC, formally organized in 1999, is an approved subcommittee of the UIBC. The purpose of the UCEC is to improve upstream project and business results by providing metrics for better cost engineering. The UCEC metrics provide asset evaluation and concept development professionals with a better understanding of costs and schedules. The fourteenth annual UCEC meeting will be hosted by Hess in Houston, Texas. The meeting agenda focuses on an overview of the 2012 Upstream Metrics Report, selected cost engineering topics, and plans for the 2013 UCEC Program. For more information, please contact **Carlton Karlik** at **ckarlik@ipaglobal.com**.

July 8 - 11

IPA to Present at AACE International's Annual Meeting, San Antonio, Texas

Fred Biery, IPA Manager of Mining, Minerals, and Metals, and Alex Ogilvie, Research Team Leader for the Downstream Area, will speak about process industry estimate accuracy and precision at the Association for the Advancement of Cost Engineering (AACE) International's 56th Annual Meeting. Fred and Alex will explain how IPA's survey results compare to industry expectations, and how definitive project scope at authorization affects estimate variability. In addition to the presentation, a paper co-authored by Fred, Alex, Paul Barshop, Chief Operating Officer, and Robert Brown, Manager Cost Engineering and Cost Services, ***Quantifying Estimate Accuracy and Precision for the Process Industries: A Review of Industry Data***, compares estimated costs at the various stages of project definition to actual costs from over 460 projects executed over the last 20 years. For more information, visit **www.aacei.org/am/currentam**.

September 11 - 12

Cost Engineering Committee (CEC) 2012 in Tysons Corner, Virginia

The CEC, formally organized in 1998, is an approved subcommittee of the IBC. The CEC focuses on all aspects of cost (or investment) engineering, including cost estimating, scheduling, and project control practices and metrics, with the goal of expanding the capability of the owner cost engineer. The primary vehicles for accomplishing these objectives are metrics, research, and practice sharing. The event is structured as a working meeting in which active participation is expected; the reward for participants is greater insight into the metrics and Best Practices. For more information, please contact **Robert Brown** at **rbrown@ipaglobal.com**.

November 12 - 14

UIBC 2012 in Tysons Corner, Virginia

The Upstream Industry Benchmarking Consortium (UIBC) provides an independent forum for each participating company to view its performance against the performance of other companies. The vision for UIBC is to present a full suite of asset metrics. Current metrics from all participants will be presented, including a representative sample of each company's facilities and subsurface execution metrics. Deliverables from the conference will be a set of metrics for each of the participating companies, showing each company's position relative to other companies; sharing of project experiences through networking with peers from other companies; and information on the Best Practices used by participants to improve their overall asset developments. For more information, please contact **David Rosenberg** at **drosenberg@ipaglobal.com**.

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IPA improves the competitiveness of our customers through enabling more effective use of capital in their businesses. It is our mission and unique competence to conduct research into the functioning of capital projects and project systems and to apply the results of that research to help our customers create and use capital assets more efficiently.

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The IPA Institute's mission is aligned with the overall IPA mission to improve the capital productivity of its clients. The programs offered provide a forum for in-depth understanding of key elements of the capital project process and how to apply these learnings to effect positive changes and improvements, resulting in the more effective use of capital.

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